

WHAT IS CLAIMED IS:

1. A pharmaceutical composition for repair of epithelial tissues comprising a first polypeptide having the biological activity of a platelet derived growth factor (PDGF) and a second polypeptide having the biological activity of keratinocyte growth factor (KGF).

2. The pharmaceutical composition of claim 1, wherein the first polypeptide comprises a full-length PDGF polypeptide.

3. The pharmaceutical composition of claim 1, wherein the first polypeptide comprises a biologically active fragment of a full-length PDGF polypeptide.

4. The pharmaceutical composition of claim 1, wherein the first polypeptide comprises one selected from the group consisting of PDGF A chain and PDGF B chain.

5. The pharmaceutical composition of claim 1, wherein the first polypeptide is produced by expression of a DNA molecule that encodes PDGF in a host cell, wherein the host cell comprises one selected from the group consisting of a bacterial cell, a yeast cell, a mammalian cell, and an insect cell.

6. The pharmaceutical composition of claim 1, wherein the second polypeptide comprise a full-length KGF.

7. The pharmaceutical composition of claim 1, wherein the second polypeptide comprises a biologically active fragment of a full-length KGF polypeptide.

5 8. The pharmaceutical composition of claim 1, wherein the second polypeptide is produced by expression of a DNA molecule that encodes KGF in a host cell, wherein the host cell comprises one selected from the group consisting of a bacterial cell, a yeast cell, a mammalian cell, and an insect cell.

10 9. The pharmaceutical composition of claim 1, further comprising a pharmaceutically acceptable carrier.

10. A method of repairing epithelial tissues comprising applying to the tissue to be repaired the pharmaceutical composition of claim 1.

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11. The method of claim 10, wherein the epithelial tissue is selected from the group consisting of skin, gastric lining, and intestinal lining.

12. The method of claim 10, wherein the pharmaceutical composition is
20 applied in the manner selected from the group consisting of locally, orally, intradermally, subcutaneously, intraluminally, intragastrically, and intraperitoneally.

~~13. A method of repairing or preventing epithelial cell damage comprising applying to the cells to be protected or repaired a pharmaceutical composition comprising PDGF and a composition comprising KGF~~

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~~14. The method of claim 13, wherein the pharmaceutical composition comprising PDGF and the pharmaceutical composition KGF are the same pharmaceutical composition.~~

5 15. The method of claim 13, wherein application of PDGF and KGF is contemporaneous.

16. A method of repairing epithelial cell damage comprising applying to the epithelial cell a pharmaceutical composition comprising a first DNA molecule
10 and a second DNA molecule wherein the first DNA molecule comprises a first nucleotide sequence encoding PDGF and the second DNA molecule comprises a second nucleotide sequence encoding KGF.

17. The method of claim 16, wherein the first DNA molecule further
15 comprises a secretion leader encoding nucleotide sequence, wherein the secretion leader is sufficient for secretion of PDGF.

18. The method of claim 16, wherein the first DNA molecule further comprises a secretion leader encoding nucleotide sequence, wherein the secretion
20 leader is sufficient for secretion of KGF.

19. The method of claim 16, wherein the first and second DNA molecules are present on the same plasmid.

25 20. The method of claim 16, wherein the first and second DNA molecules are present on separate plasmids.

21. The method of claim 16, wherein the first DNA molecule is encapsulated in a liposome.

22. The method of claim 16, wherein the second DNA molecule is
5 encapsulated in a liposome.

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~~23. A kit comprising the pharmaceutical composition of claim 1 and instructions for use thereof for prevention and repair of epithelial cells.~~

10 24. A kit comprising a first DNA molecule and a second DNA molecule wherein the first DNA molecule comprises a first nucleotide sequence encoding PDGF and the second DNA molecule comprises a second nucleotide sequence encoding KGF.

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15 25. The pharmaceutical composition of claim 1, also comprising a third polynucleotide having the biological activity of insulin-like growth factor (IGF).

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20 26. The pharmaceutical composition of claim 25, wherein IGF comprises one selected from the group consisting of IGF-1 and IGF-2.

27. The pharmaceutical composition of claim 25, also comprising a fourth polynucleotide having the biological activity of insulin-like growth factor binding protein (IGFBP).

25 28. The pharmaceutical composition of claim 27, wherein the IGFBP comprises one selected from the group consisting of IGFBP-1, IGFBP-2, IGFBP-3, IGFBP-4, IGFBP-5, and IGFBP-6.

29. The pharmaceutical composition of claim 25 wherein the third polypeptide comprises full-length IGF.

5 30. The pharmaceutical composition of claim 25 wherein the third polypeptide comprises a biologically active fragment of IGF.

31. The pharmaceutical composition of claim 27 wherein the fourth polypeptide comprises a full-length IGFBP.

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32. The pharmaceutical composition of claim 27 wherein the fourth polypeptide comprises a biologically active fragment of an IGFBP.

33. The pharmaceutical composition of claim 25 wherein the third
15 polypeptide is produced by expression of a DNA molecule that encodes IGF in a host cell, wherein the host cell comprises one selected from the group consisting of a bacterial cell, a yeast cell, a mammalian cell, and an insect cell.

34. The pharmaceutical composition of claim 27 wherein the fourth
20 polypeptide is produced by expression of a DNA molecule that encodes an IGFBP in a host cell, wherein the host cell comprises one selected from the group consisting of a bacterial cell, a yeast cell, a mammalian cell, and an insect cell.

35. The pharmaceutical composition of claim 25 further comprising a
25 pharmaceutically acceptable carrier.

36. The pharmaceutical composition of claim 27 further comprising a pharmaceutically acceptable carrier.

37. A method of repairing epithelial tissues comprising applying to the
5 tissue to be repaired the pharmaceutical composition of claim 25.

38. A method of repairing epithelial tissues comprising applying to the tissue to be repaired the pharmaceutical composition of claim 27.

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10 ~~39. The method of claim 38, wherein the epithelial tissue comprises one selected from the group consisting of skin, gastric lining, and intestinal lining.~~

40. The method of claim 38, wherein the epithelial tissue comprises one selected from the group consisting of skin, gastric lining, and intestinal lining.

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41. The method of claim 39, wherein the pharmaceutical composition is applied in a manner selected from the group consisting of locally, orally, intradermally, subcutaneously, intraluminally, intragastrically, and intraperitoneally.

20 42. The method of claim 40, wherein the pharmaceutical composition is applied in a manner selected from the group consisting of locally, orally, intradermally, subcutaneously, intraluminally, intragastrically, and intraperitoneally.

25 43. A method of repairing or preventing epithelial cell damage comprising applying to the cells to be protected or repaired the pharmaceutical composition of claim 13 and further comprising a composition comprising IGF.

44. A method of repairing or preventing epithelial cell damage comprising applying to the cells to be protected or repaired the pharmaceutical composition of claim 43 and further comprising a composition comprising an IGFBP.

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45. A method of repairing epithelial cell damage comprising applying to the epithelial cell a pharmaceutical composition comprising a first DNA molecule, a second DNA molecule, and a third DNA molecule wherein the first DNA molecule comprises a first nucleotide sequence encoding PDGF, the second DNA molecule
10 comprises a second nucleotide sequence encoding KGF, and the third DNA molecule comprise a third nucleotide sequence encoding IGF.

46. A method of repairing epithelial cell damage comprising applying to the epithelial cell a pharmaceutical composition comprising a first DNA molecule, a
15 second DNA molecule, a third DNA, and a fourth DNA molecule wherein the first DNA molecule comprises a first nucleotide sequence encoding PDGF, the second DNA molecule comprises a second nucleotide sequence encoding KGF, the third DNA molecule comprise a third nucleotide sequence encoding IGF, and the fourth DNA molecule comprises a fourth nucleotide sequence encoding an IGFBP.

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47. A kit comprising a first DNA molecule, a second DNA molecule and a third DNA molecule wherein the first DNA molecule comprises a first nucleotide sequence encoding PDGF, the second DNA molecule comprises a second nucleotide sequence encoding KGF, and the third DNA molecule comprises a third
25 nucleotide sequence encoding IGF.

48. A kit comprising a first DNA molecule, a second DNA molecule, a third DNA molecule, and a fourth DNA molecule wherein the first DNA molecule comprises a first nucleotide sequence encoding PDGF, the second DNA molecule comprises a second nucleotide sequence encoding KGF, the third DNA molecule
5 comprises a third nucleotide sequence encoding IGF, and the fourth DNA molecule comprises a fourth nucleotide sequence encoding an IGFBP.

49. The pharmaceutical composition of claim 1, comprising one selected from the group consisting of a cream, a foam, an injectable solution, a
10 spray, a gel matrix, a sponge, drops, and a wash.

50. The pharmaceutical composition of claim 25, comprising one selected from the group consisting of a cream, a foam, an injectable solution, a spray, a gel matrix, a sponge, drops, and a wash.
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51. The pharmaceutical composition of claim 27, comprising one selected from the group consisting of a cream, a foam, an injectable solution, a spray, a gel matrix, a sponge, drops, and a wash.

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